

**REMARKS**

[0001] Claims 1–16 are pending of the Application of Sciichi Kawano, filed October 3, 2003, application no. 10/678,624 (hereinafter the “Application”). The Office Action mailed March 22, 2007 (hereinafter “Office Action”) rejected Claims 1 & 2 under the Second Paragraph of 35 U.S.C. § 112. The Office Action rejected Claims 1, 2, 14–16 under 35 U.S.C. § 102(b) as being anticipated by Drew, U.S. Patent No. 6,360,945 (hereinafter “Drew”) and as being anticipated by Ding, U.S. Patent No. 6,430,663 (hereinafter “Ding”). The Office Action also rejected Claims 1, 2, 14–16 under 35 U.S.C. § 102(e) as being anticipated by Kumagai, *et al.*, U.S. PGP No. 20030182547 (hereinafter “Kumagai”) and as being anticipated by Milne, *et al.*, U.S. Patent No. 6,711,660 (hereinafter “Milne”). Finally, the Office Action rejected Claims 3–13 under 35 U.S.C. § 103(a) as being unpatentable over Milne in view of Dong, U.S. Patent No. 5,696,897 (hereinafter “Dong”).

**AMENDMENTS TO THE SPECIFICATION**

[0002] There are no amendments to the specification at this time.

**AMENDMENTS TO THE DRAWINGS**

[0001] There are no amendments to the drawings at this time.

**AMENDMENTS TO THE CLAIMS**

[0002] The claims have been amended to more particularly point out the features of the present invention. The amendments are fully supported by the specification, drawings, and claims. Claims 1 and 15 are amended to clarify the meaning of and provide antecedent basis for the term “operating system.” Claims 1, 14, and 15 are amended to make the required correction to clarify that the execution unit executes “executable code.”

[0003] Claims 5–7 have been cancelled. Claims 1 and 14–16 have been amended to include the content of Claims 5 and 6. Claims 1 and 14–16 have also been amended to clarify that the present invention switches between multiply operating systems, each operating system

have different strengths and weaknesses in response to changes in information processing needs. *See* Application at pp. 1–2; 7, lns. 19–30; 10, ln. 40–11:1. Claims 3 and 4 have also been amended to clarify this same point. *Id.* Claims 7–11 and Claim 13 have been amended to depend from Claim 1. Claim 7 has been further amended to clarify that the present invention switches between multiply operating systems, each operating system have different strengths and weaknesses in response to changes in information processing needs.

**REJECTION OF CLAIMS 1, 14, 15 UNDER 35 U.S.C. §112 (SECOND PARAGRAPH)**

[0004] Claims 1, 14, and 15 stands rejected under 35 U.S.C. 112, second paragraph, as failing to provide antecedent basis and to distinctly claim the invention. Claims 1 and 15 are amended to clarify the meaning of and to provide antecedent basis for the term “operating system.” Claims 1, 14, and 15 are amended to make the required correction to clarify that the execution unit executes “executable code.”

**REJECTION OF CLAIMS 1, 14–16 UNDER 35 U.S.C. §102(b)(e)**

[0005] The Office Action rejected Claims 1, 2, 14–16 under 35 U.S.C. § 102(b) as being anticipated by Drew and as being anticipated by Ding. The Office Action also rejected Claims 1, 2, 14–16 under 35 U.S.C. § 102(e) as being anticipated by Kumagai and as being anticipated by Milne. The Applicants respectfully traverse these rejections. “Anticipation under 35 U.S.C. §102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention. ... Whether such art is anticipating is a question of fact.” *Apple Computer, Inc. v. Articulate Systems, Inc.* 234 F.3d 14, 20, 57 USPQ2d 1057, 1061 (Fed. Cir. 2000). It is well settled that under 35 U.S.C. §102 “an invention is anticipated if . . . all the claim limitations [are] shown in a single art prior art reference. Every element of the claimed invention must be literally present, arranged as in the claim. The identical invention must be shown in as complete detail as is contained in the patent claim.” *Richardson v. Suzuki Motor Co., Ltd.*, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). In determining whether a prior art reference anticipates a claim, it is necessary to (1) determine the scope of Applicant's broadest claim, (2) determine exactly what

the single prior art reference discloses, and (3) compare each and every claim limitation against the prior art disclosure. *SSIH Equipment, S.A. v. U.S Int'l Trade Commission et al.*, 218 U.S.P.Q. 678, 688. Only if each limitation is literally disclosed by the prior art reference is the claim anticipated.

[0006] Initially, it may be useful to review the invention described in the Application and the disclosures of the prior art. In general, the Application describes “. . . switching between a plurality of operating systems . . .” based on “. . . the kind of information processing to be performed. . . .” Application at p. 1, lns 25–6; p. 10, ln. 46.

[0007] With regard to Claims 1, and 14–16, Applicants currently amend Claims 1, and 14–16 to clarify the scope of the present invention to include the elements necessary to effectively carry out the “. . . switching between a plurality of operating systems . . .” based on “. . . the kind of information processing to be performed. . . .” *Id.* Claim 1, as representative of Claims 14–16, appears below, with emphasis added as currently amended:

Apparatus, comprising:

an external storage device having a normal partition storing an executable program for a main operating system, which can be referred to by a user, and a hidden partition storing an executable program for an sub-operating-system~~and, which is~~ hidden from the user;  
a suspend unit which stops the operation of the main operating system and saves the state of execution of the main operating system to a save area upon receiving a switch direction that arises in response to a first change in information processing needs;  
a reader which reads the executable program for the sub-operating-system from the hidden partition to a main storage unit upon receiving a direction for reading after the suspend unit stops the operation of the main operating system and saves the state of execution of the main operating system to the save area in response to a direction for reading the program from the user; and  
an execution unit which executes the executable program of the sub-operating-system when the executable program of the sub-operating-system is fully read into said the main storage unit.

[0008] The currently amended Claim 1 clarifies that the apparatus of the present invention performs the operations necessary to switch between operating systems, without

compromising those operating systems, in response to “change[s] in information processing needs.” See Application pp. 10, ln. 40–11:1. As information processing needs change over time the attributes of one operating system with respect to another make one operating system more desirable than the other. Claim 1 recites a “main operating system” and a “sub-operating-system.” The main operating system “is a general-purpose OS for executing various applications. For example, the main OS is an OS having comparatively high-performance functions such as WINDOWS®.” *Id.* at p. 7, lns. 10–12.

[0009] The sub-operating-system is a more customized operating system and “may be a special-purpose OS for executing a particular application only. For example, the sub-OS may be a comparatively function-limited OS such as DOS, or a customized OS formed by removing part of the functions of Linux®. The sub-OS may have a reduced power consumption in comparison with the main OS since the sub-OS is limited in function in comparison with the main OS. For example, the information processing apparatus 10 may operate the CPU, etc., on the sub-OS at a clock frequency lower than that at which it operates the CPU, etc., on the main OS. Also, when the sub-OS runs, the information processing apparatus 10 may operate by supplying power to a smaller number of hardware components or by using a smaller amount of memory.” *Id.* at p. 7, lns. 20–30.

[0010] As information processing needs change, the present invention is able to change operating systems to capitalize on their strengths. When “. . . comparatively high-performance functions such as WINDOWS®” are in use, *id.* at p. 7, lns. 10–12, the present invention maintains the main operating system. However, when processing needs are smaller, the present invention can switch to the sub-operating-system to save on energy, time, and other resources. *Id.* at p. 7, lns. 20–30.

[0011] To emphasize the functionality of the present invention to seamlessly switch between operating systems, elements and limitations of the present invention formerly contained in Claims 5–7 are, pursuant to the current amendments, are incorporated in Claims 1 and 14–16. For example, Claim 1 now includes “a suspend unit” element and “a resume unit” element,

together with a limitation on the “reader” element that requires the “reader” to wait to perform its function until “after the suspend unit stops the operation of the main operating system and saves the state of execution of the main operating system.” None of the prior art references, including Drew, Ding, Kumagai, and Milne, teach these new elements, and some do not they teach the “reader” and “execution unit” elements that have always been in Claim 1, according to limitations of these elements that remain unchanged.

[0012] As discussed below, the prior art references do not contain both elements that have always been in Claim 1 and elements added pursuant to the current amendments because the prior art references are not directed at seamlessly switching between operating systems based on “. . . the kind of information processing to be performed. . . .” Application at p. 1, lns 25–6; p. 10, ln. 46. Drew may teach a method and apparatus “to reduce the risk of unauthorized access,” primarily on ATM machines, through the use of “a hidden security partition,” col. 1, lns. 2, 12–13, 20, but does not teach (1) a “main operating system” and a “sub-operating-system,” i.e., two different operating systems, or (2) switching operating systems in response to “change[s] in information processing needs.”

[0013] Similarly, Ding may teach methods for placing a single operating system and a “copy” of that operating system in two “different partition[s]” so that a user may “boot” from the second operating system if the first operating system crashes, col. 1, ln. 2; col. 2, lns. 18–22, but Ding does not teach (1) two different operating systems, or (2) switching operating systems in response to changing information processing needs. Additionally, Kumagai may teach “a storage medium which stores information items, the information items comprising a first program provided on a first partition; a second program and data provided on a second partition to restore the first program on the first partition to a predetermined state,” ¶ 10, but Kumagai does not teach (1) two different operating systems, or (2) switching operating systems in response to changing information processing needs. Finally, Milne may teach “a host-accessible user partition [and] a host-inaccessible hidden partition” with “diagnostic software within the hidden partition . . . for determining a condition of the computer system,” col. 1, lns. 56–57; col. 1, ln.

66–col. 2, ln. 1, but Milne does not teach (1) two different operating systems, or (2) switching operating systems in response to changing information processing needs.

[0014] Considering that none of the prior art references teaches elements (1) and (2), it is not surprising that none of the prior art references teach the elements and limitations incorporated from the now canceled Claims 5–7 that are necessary to implement elements (1) and (2). Neither Drew, Ding, Kumagai, nor Milne teach (3) “a suspend unit,” which “stops the operation of the main operating system and saves the state of execution of the main operating system to a save area upon receiving a switch direction that arises in response to a first change in information processing needs.” Finally, neither Drew, Ding, Kumagai, nor Milne teach a (4) “reader” required to wait to perform its function until “after the suspend unit stops the operation of the main operating system and saves the state of execution of the main operating system.”

[0015] Furthermore, Claim 1 has always recited a (5) “reader . . . reads the executable program” for the sub-operating-system “from the hidden partition to a main storage unit” and (6) an “execution unit” that “executes the executable program” of the sub-operating-system. Since neither Drew, Ding, Kumagai, nor Milne teach a sub-operating-system, they cannot teach reading the system into main storage or executing its underlying executable program. Although Drew does not teach reading an operating system from a partition, it does teach “READ[ING] PARTITION DATA FROM A HARD DISK,” Figure 6b, but Drew does not teach reading this “DATA” into main storage. Furthermore, although Drew teaches “access” of the data, col. 3, lns. 37–40, Drew is silent about executing a program embedded in the data. Similarly, Milne teaches “READ[ING] A HOST SELECTED OPERATING SYSTEM,” but Milne is silent about reading this “OPERATING SYSTEM” into main storage.

[0016] Drew, Ding, Kumagai, and Milne do not teach elements (1)–(4). Drew also does not teach elements (5) and (6). Milne also does not teach element (5). Therefore, neither Drew, Ding, Kumagai, nor Milne anticipate Claim 1. *SSIH Equipment*, 218 U.S.P.Q. at 688.

[0017] Claim 2 depends from Claim 1 and is allowable based on Claim 1. Additionally, Claim 2 recites “a predetermined password” used to access “the hidden partition. Whatever

alternative approaches may be discussed in the cited prior art references for accessing the hidden partition, neither Drew, Ding, Kumagai, nor Milne teach the use of a “password” to access the hidden partition.

[0018] The Applicants respectfully assert that Claims 14–16 are similar in scope to Claim 1 and that the arguments presented above for Claim 1 are equally applicable and therefore Claims 14–16 are allowable.

REJECTION OF CLAIMS 3–13 UNDER 35 U.S.C. §103(a)

[0019] The Office Action rejected Claims 3–13 under 35 U.S.C. § 103(a) as being unpatentable over Milne in view of Dong. The Applicants respectfully traverse this rejection. The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. MPEP at § 2142. The prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP at § 2142. In addition, even if all the claim limitations are taught or suggested by the prior art references, there must be some suggestion or motivation to combine reference teachings to establish obviousness. MPEP §2142. Obviousness may be rebutted by showing that “the art, in any material respect, teaches away from the claimed invention.” MPEP at § 2144.05.III. “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. The degree of teaching away will depend on the particular facts; in general, a reference will teach away if it suggests that the line of development flowing from the reference’s disclosure is unlikely to be productive of the result sought by the applicant.” *United States v. Adams*, 383 U.S. 39, 52, 148 USPQ 479, 484 (1966). The Applicants respectfully assert that Milne and Dong combined fail to teach or disclose each element of the claimed invention as required under 35 U.S.C. § 103(a). The Applicants assert that there is no motivation, suggestion, or teaching is found in either Milne or Dong to combine the references.

[0020] When combined, Milne and Dong fail to teach or disclose each element of any of Claims 3–4 and 7–13 (Claims 5 and 6 being cancelled), as required under 35 U.S.C. § 103(a). As discussed above, Claims 7–11 and Claim 13 have been amended to depend from Claim 1. As a result that Claims 7–13 all depend from Claim 1 and are allowable based on Claim 1, because the combination of Milne and Dong does not disclose every element of Claim 1. Additional elements and limitations specific to Claims 7–13 are also not taught in the combination of Milne and Dong. Also, the combination of Milne and Dong does not disclose every element of Clams 3 and 4.

[0021] Claim 1 teaches (1) two different operating systems, (2) switching operating systems in response to changing information processing needs, and several additional elements and limitations necessary to perform the switching operation. As discussed, Milne may teach “a host-accessible user partition [and] a host-inaccessible hidden partition” with “diagnostic software within the hidden partition . . . for determining a condition of the computer system,” col. 1, lns. 56–57; col. 1, ln. 66–col. 2, ln. 1, but Milne does not teach (1) two different operating systems, or (2) switching operating systems in response to changing information processing needs. Additionally, Dong may teach “sav[ing] the state of [a] computer operating system such that the computer system may be suspended quickly,” col. 2, lns. 4–5, but Dong does not teach (1) two different operating systems, or (2) switching operating systems in response to changing information processing needs.

[0022] The currently amended Claim 7 now requires that the “resume unit” wait until “after a second change in information processing needs.” As discussed, neither Milne nor Dong teach (2) switching operating systems in response to changing information processing needs, and several additional elements and limitations necessary to perform the switching operation.

[0023] The combination of Milne and Dong fails to teach the limitation of Claim 8 requiring “sav[ing] the state of execution of the main operating system to the save area provided in the hidden partition.” This limitation is important because it advances the coordination

required to switch between operating systems by saving information pertaining to the suspended operating system where the active operating system cannot access it.

[0024] The combination of Milne and Dong fails to teach the limitation of Claim 9 requiring “assign[ing] part of the main storage device as the save area.” This limitation is important because it advances the coordination required to switch between operating systems,

[0025] Neither Milne nor Dong teach the use of an ACPI function as recited in Claim 10 to secure the save area in a non-volatile-sleeping area. Also, neither Milne nor Dong teach the video memory recited in Claim 11 and required by Claim 12, as Claim 12 depends from Claim 11. Although Milne teaches a volatile storage system in terms of “DRAM,” col. 1, lns. 40–44, Milne does not teach saving the execution state of the main operating system with respect to the volatile storage system.

[0026] Furthermore, the combination of Milne and Dong fails to teach the limitation of the currently amended Claim 3 requiring that “the first change in information processing needs operating system is a requires the sub-operating system which is activated in a time period shorter than that required to activate a with a shorter activation time than the main operating system.” Milne does not discuss changing information processing needs. Furthermore, Milne may teach “well known techniques allowing operating systems to boot up in a shorter time,” Office Action at p. 6, citing Dong at col. 1, lns. 13–34, but these techniques have nothing to do with the nature of the sub-operating-system and its attributes. *See* Application at p. 7, lns. 10–12 (discussing attributes of the sub-operating-system that allow the sub-operating-system to have a shorter activation time). Rather, Dong teaches quick activation after suspension by saving the operating system state on DRAM or non-volatile storage systems. Dong at col. 1, lns. 13–34. However, storing techniques have nothing to do with selecting a first operating system over a second operating system based on the inherently shorter activation time of the first operating system resulting from the characteristics of the first operating system.

[0027] Also, the combination of Milne and Dong fails to teach the limitation of the currently amended Claim 4 requiring that a “change in information processing needs operating

~~system is allows the sub-operating-system having a power consumption per unit time lower than that of a main operating system which runs in the apparatus when the user has not made the direction, and said reader reads the executable program for the sub-operating system from the hidden partition hidden from the main operating system to said main storage device to adequately and preferably meet the new information processing needs.~~" Again, Milne may teach "well known technique[s] for operating system to consume less power," Office Action at p. 6, citing Dong at col. 1, lns. 35–40, but these techniques have nothing to do with the nature of the sub-operating-system and its attributes. *See Application* at p. 7, lns. 10–12 (discussing attributes of the sub-operating-system that allow the sub-operating-system to consume less power).

*Application* at p. 7, lns. 10–12. Rather, Dong teaches power reduction by suspending the operating system, Dong at col. 1, lns. 13–34, not employing a more efficient operating system.

[0028] Finally, no motivation, suggestion, or teaching is found in either Milne or Dong to combine the references. *See MPEP §2142*. Milne is directed toward "a host-accessible user partition [and] a host-inaccessible hidden partition" with "diagnostic software within the hidden partition . . . for determining a condition of the computer system." col. 1, lns. 56–57; col. 1, ln. 66–col. 2, ln. 1. However, Dong is directed toward "sav[ing] the state of [a] computer operating system such that the computer system may be suspended quickly," col. 2, lns. 4–5. Although an operating system may be the subject of both patents, diagnosing problems with an operating system and providing methods for suspending an operating system are deal with different problems and require different skill sets. *See MPEP §2143.01*.

[0029] Applicants, therefore, respectfully assert that Claim 3–4 and 8–13 are in condition for allowance. *See MPEP* at § 2142 (requiring every element be found in the combination of prior art references).

[0030] Should additional information be required, the Examiner is respectfully asked to notify the Applicants of such need. If any impediments to the prompt allowance of the claims can be resolved by a telephone conversation, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,

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